AMENDMENTS TO THE SPECIFICATION

Please note that the paragraph numbers identified below correspond to the application as filed and not as published.

Please replace Paragraph 1 with the following corrected paragraph:

[0001] The present application is a continuation of U.S. serial No. 09/764,523, filed January 18, 2001, now issued as U.S. Patent No. 6,736,147, and claims the priority benefit of U.S. provisional application No. 60/176,592, filed January 18, 2000.

Please replace Paragraph 37 with the following corrected paragraph:

[0037] Fluorine active species generated in the remote plasma discharge chamber radiates a great volume of heat energy when losing activation by contact with the metal surface. Because of this heat energy, the temperature of the contact surface rises. For piping connecting the second plasma discharge chamber to the reaction chamber and valves mounted on the piping, O-rings made of fluorine-containing rubber and other materials are typically used to seal the inside from the external environment. The above-mentioned overheating caused by contact with fluorine active species destroys O-rings. Particularly, within the above-mentioned valve for pressure regulation, there is a risk that O-rings are broken off. If the O-rings are damaged, piping airtightness cannot be maintained. As a result, impurity contamination occurs due to outside air penetration into the reaction chamber, or leakage of gases harmful to humans, such as fluorine active species, takes place. Deteriorated O-ring material flows within the piping to cause internal contamination to a semiconductor-processing device including the reaction chamber. Also, if fluorine-containing rubber (e.g., VITON® or ~~Karlez®~~ KALREZ®) that is used for a movable part within the piping such as a shaft seal for the valves is overheated, it deteriorates, loses its elasticity and hinders mobility of the parts.

Please replace Paragraph 84 with the following corrected paragraph:

[0084] In the illustrated example, the valve 15 is set up at the plasma discharge chamber side before the junction 31. For the internal surface of the piping 14 and the valves 6, 15, preferably fluorine-passivated aluminum, aluminum alloy, stainless steel or nickel material is used, but aluminum or aluminum alloy can also be used. For sealing materials of the valves 6,

15, preferably fluorocarbon polymers such as PTFE (polytetrafluoroethylene), PFA (tetrafluoroethylene•perfluoroalkylvinyl ether copolymer) or PCTFE (polychlorotrifluoroethylene) or perfluoroelastomer is used, but resin or fluorine-containing rubber (e.g., VITON® or ~~Kalrez®~~ KALREZ®) that has heat-resistance and corrosion resistance can also be used.

Please replace Paragraph 98 with the following corrected paragraph:

[0098] In Figure 4, the cross-section of the valve 15 used in the present embodiments is shown. Figure 4(a) shows a closed state of the valve 15 while Figure 4(b) shows an open state of the valve 15. The valve 15 comprises a body 24 made of aluminum or aluminum alloy. A valve body 30 is fixed to a shaft 32 by a bolt [[32]]33. On the valve body 30, an O-ring 34, which attains airtightness by sealing the inside 35 of the body 24, is mounted. At an upstream opening 22a of the valve 15, portions of the piping 14 (Figure 3) to be connected to the remote plasma discharge chamber can be mounted. At a downstream opening 23a, portions the piping 14 to be connected to the gas exit port 7 can be mounted. The mounting direction at the openings 23a and 22a is not limited and can be changed according to circumstances. Material used for the body 24 of the valve 15 is not limited to aluminum or aluminum alloy. Other materials that have excellent resistance to corrosion, such as stainless steel, can also be used. The valve body 30 is made of aluminum or aluminum alloy, but metals excellent in corrosion resistance such as nickel, titanium, stainless steel or resins excellent in corrosion resistance such as polyimide resin can be used. Additionally, the bolt 33 and the shaft 32 are made of metals that have excellent resistance to corrosion, such as aluminum, aluminum alloy, nickel and stainless steel. The O-ring 34 comprises an elastic material that is resistant to deterioration by the flowing gas to be used. The O-ring 34 preferably comprises fluorine-containing rubber, and more preferably a perfluoroelastomer.

Please replace Paragraph 99 with the following corrected paragraph:

[0099] Regarding the valve 15 used in this embodiment, in its closed state, the valve body 30 is at the position shown in Figure 4(a). The O-ring 34 mounted on the valve body 30 seals the inside 35 of the body 24. As shown in Figure 4(b), when the valve 15 is open, the valve body 30 is pulled up into the space 36 within the body 24 of the valve 15 and is stored. The

vertical motion of the valve body 30 is performed by moving the shaft 32 by a driving mechanism (not shown) of the valve 15. Importantly, as shown in Figure 4(b), when the valve 15 is open, the valve body 30 and the shaft 32 are stored entirely within the space 36 and are completely removed from the passage defined between the opening 23a and the opening 22a. Thus, when the valve body 30 is in the position of Figure 4(a), there is no structure hindering cleaning gas flowing through the valve 15.

Please replace Paragraph 113 with the following corrected paragraph:

[0113] In another experiment, in order to remove undesirable silicon oxide, formed from TEOS as raw material, adhered inside the reaction chamber 2, 1 slm of NF_3 and 3 slm of argon were used for the cleaning gas. Fluorine active species were generated by applying 2,800 W of 400 kHz radio frequency electric power to the remote plasma discharge chamber 13. The products of this plasma, including activated fluorine species, were introduced to reaction chamber 2 from the remote plasma chamber 13. The silicon oxide was removed at a rate of about 1.5 **[[?]]**µm/min.

Please replace Paragraph 116 with the following corrected paragraph:

[0116] While originally designed to optimize epitaxial deposition of silicon on a single substrate at a time, the superior processing control has been found to have utility in thermal and/or remote plasma CVD of a number of different materials. The basic configuration of the device 110 is available commercially under the trade name ~~Epsilon®~~ EPSILON® from ASM America, Inc. of Phoenix, AZ.

Please replace Paragraph 134 with the following corrected paragraph:

[0134] In an exemplary silicon nitride deposition, about 1.5 slm ammonia (NH_3) and 15 sccm silane (SiH_4) are introduced. Nitrogen continues to flow at the same flow rate, and temperature and pressure are maintained at about 780[[?]]°C and 50 Torr. Ammonia and silane flow are continued for about 90 seconds, reacting at the substrate surface to deposit 430 a layer of silicon nitride with a thickness of about 3 nm. As noted, one or more of the reactants can be activated through the remote plasma discharge chamber 13, thus lowering the temperature for the

same deposition rate. In this case, the reaction chamber pressure is preferably reduced to facilitate plasma ignition within the remote plasma discharge chamber.

Please replace Paragraph 135 with the following corrected paragraph:

[0135] In an exemplary polysilicon deposition, a carrier flow of N_2 gas is maintained at about 15 slm while about 350 sccm silane is introduced. Employing disilane can advantageously improve deposition rates. Pressure continues to be maintained at about 50 Torr, and the temperature held steady at about 680[[?]]°C. Within about 120 seconds, a polysilicon electrode layer of about 150 nm is deposited 637. It will be understood that the polysilicon formed by this method would be doped for appropriate conductivity after deposition 637, though *in situ* doping (during deposition) is also contemplated. For *in situ* doping, common doping sources such as phosphine, arsine or diborane can be added to the silane flow. In another arrangement, the chamber can be backfilled to about atmospheric pressure for an H_2/SiH_4 polysilicon process. As noted, one or more of the reactants can be activated through the remote plasma discharge chamber 13, thus lowering the temperature for the same deposition rate. In this case, the reaction chamber pressure is preferably reduced to facilitate plasma ignition within the remote plasma discharge chamber.